What is diabetes and how does it affect the human body?Diabetes is a disease in which a person's body is incapable of regulating the amount of sugar in his or her blood. Type I diabetes or juvenile diabetes is believed to be caused by pancreatitis, which is when the pancreas becomes swollen. This results in severe damage to the cells that produce insulin. (“Types” Pg.1). The insulin that produces beta cells of the pancreas is completely destroyed and the body can no longer produce insulin, within five to ten years. (“Types” Pg.1)

Insulin is needed to move blood sugar into cells, where it is then stored and later used for energy (“Types” Pg.1). Without enough insulin, glucose builds up in the bloodstream instead of going into the cells (“Types” Pg.1). Therefore, the body is unable to use this glucose for energy; this leads to the symptoms of type I diabetes (“Types” Pg.1). Genetics is also a possible for the auto-immune reaction in the body (“Types” Pg.1). In recent studies, diabetes is the sixth leading cause of death and the fifth leading cause of death from disease in 2007. (Statistics, Pg.1)

Statistics show that 10.2% of women living in the Untied States are diagnosed with diabetes from ages 20 years and older and 11.2% are men. (Statistics, Pg. 1) Of the percentages, 3.7 million are African Americans, 14.9 million are Caucasian Americans, and 2.5 million are Hispanic/Latin Americans (Statistics, Pg.1).

Although type I diabetes can occur at any age, it is often diagnosed in children, adolescents, or young adults. (“Top”, Pg.1) Due to diabetic’s inability to fight off infections in his or her body, diabetics are more susceptible to getting dangerous infections. An infection may make control of glucose levels more difficult, delaying recovery from an infection. (“Type of Diabetes, Pg.1)

A person has a six percent chance of developing type I diabetes if an individual has a close relative that has the disease. (“Diabetes” Pg.1) 0.4% of people who do not have a close relative with type I diabetes still have the risk of contracting the illness. (“Diabetes” Pg.1)

Common symptoms of type I diabetes include blurry vision, drowsiness, extreme hunger and thirst, frequent urination, loss of feeling or feeling a tingling sensation in the feet, and unintentional weight loss (Havas, Stephen Pg.1). Warning symptoms that a person is becoming very sick may be the first signs of type I diabetes, or may happen when the blood sugar is very high. This can cause deep rapid breathing, dry skin and mouth, flushed face, sweet smelling breath odor, nausea or vomiting, inability to keep fluids down, and stomach pain (“Type I Diabetes”, Pg.1).

A patient diagnosed with diabetes has serious aliments throughout the body. The eyes, heart, kidney, and nerves are affected to numerous problems and damages. (Hoffman, Tracy Pg.1) Many diabetics suffer from eye disease or retinopathy brought on by their chronic condition (Hoffman, Tracy Pg.1). 75% to 95% of adults that have been a diabetic for more than 15 years have an increased chance of contracting retinopathy (Seibel, John A., page 2).

Eye disease or retinopathy occurs when blood vessels located in the back of the eye become inflamed (Hoffman, Tracy Pg.1). The weak vessels can also leak blood into the eye, causing poor vision (Hoffman, Tracy Pg.1). A diabetic that has not yet reached puberty is unlikely to have diabetic retinopathy in type 1 diabetes (Seibel, John A., page 2). Often this condition is periodically tested in diabetic patients, at first, there are no symptoms (Hoffman, Tracy Pg.1) Important medical conditions such as good control of sugars, management of high blood pressure, and regulation of blood fats like cholesterol and prevent retinopathy (Seibel, John A., page 2).

Atherosclerosis or the hardening and narrowing of the arteries, is another affect type I diabetes has on the body (Mathur, Ruchi, Page 1). Macrovascular disease is a disease brought on by atherosclerosis which leads to strokes, coronary heart disease, and other large blood vessel diseases (Mathur, Ruchi, Page 1)

Type I diabetics are prone to having blood vessels in the kidney become weak and spongy. (Hoffman, Tracy Pg.1) 35% to 45% of diabetics diagnosed with type I diabetes develop kidney damage, a condition called nephropathy (Seibel, John A., page 2). Stress on the kidney’s current blood vessels occur when vessels become weak and release protein from the body through the urine, cause major problems that may result in the need for an organ transplant (Hoffman, Tracy Pg.1).

The risk for kidney disease increases over time and carries serious illnesses such as kidney failure and heart disease (Seibel, John A., page 2). It becomes apparent 15 to 25 years after the of the disease (Seibel, John A., page 2). Doctors recommend diabetics to frequent kidney tests, to measure for any damage, due to the high danger of this occurrence. (Hoffman, Tracy Pg.1)

Diabetic’s sensory nerves that permit feeling for pressure and sensation are prone to becoming weak. (Hoffman, Tracy Pg.1) Poor blood circulation to the body can cause damage to nerves (Seibel, John A., page 2). Diabetics commonly complain about nerve damage to feet and legs. (Hoffman, Tracy Pg.1) This often leads to loss of feeling in the affected body parts (Hoffman, Tracy Pg.1). To keep from getting injuries on limbs, diabetics are tested yearly for nerve damage (Hoffman, Tracy Pg.1). Digestive problems such as nausea, vomiting, and diarrhea can occur due to the damaging of nerves (Seibel, John A., page 2). Physicians screen diabetic patients yearly to make sure body parts are functioning correctly in order to avoid infections and severe injuries (Hoffman, Tracy Pg.1).

A diabetic’s main concern is usually the legs, in which diabetics have an increased chance of suffering from serious nerve damage (Hoffman, Tracy Pg.1). Also, hardening of the arteries leads to poor blood circulation in the feet (Seibel, John A., page 2). Due to the fact that diabetics have nerve damage, injuries are more likely to go unnoticed which can lead to a number of serious infections which raises the risk of amputation (Hoffman, Tracy Pg.1).   
 There are various treatment methods for type I diabetes such as insulin which can be given multiple ways, for example, mealtime insulin, basal insulin, pre-mixed insulin, and pump insulin, oral medication, and some diabetics may get gastric bypass surgery in order to increase weight loss (“Type I and II”, Pg.1).

Diabetics should discuss a diet plan with a nutritionists, so that insulin control can be accommodated properly (“Type I and II”, Pg.1). After organizing a diet plan that works best for the diabetic. Diabetics must remember to never skip meals, especially when taking insulin injections because the blood sugar will drop too low (“Type I and II”, Pg.1). Diabetics must frequently keep track of glucose levels and use his or her own needles. (“Type I and II”, Pg.1) The usage of someone else’s needles can put the diabetics at risk for other diseases such as hepatitis C and HIV. (“Type I and II”, Pg.1)

Diabetics should always have extra insulin refrigerated in case of immediate usage. (“Type I and II”, Pg.1) Diabetics need to make sure not to place insulin in a freezer, in bright light, and in extreme heat. (“Type I and II”, Pg.1) When traveling, diabetics have to be sure to have an ample supply of insulin. (“Type I and II”, Pg.1)

The type of insulin prescribed is based on the type of diabetes in which is diagnosed. Other factors would include lifestyle, age, body’s response to insulin, and how many times diabetics are capable or willing to check blood sugar levels. (“Type I and II”, Pg.1) Bolus or mealtime insulin is usually combined with basal insulin. It is given before meals to regulate the rise of blood glucose levels after eating. (“Type I and II”, Pg.1)

Basal insulin is usually given once or twice daily which controls blood sugar levels between meals and throughout the night. (“Type I and II”, Pg.1) It can also be used alone or taken with oral medication or bolus insulin. (“Type I and II”, Pg.1)

Pre-mixed insulin is taken twice daily after and between meals. Depending on the type of bolus insulin in the mixture, it may take 15-60 minutes for the insulin to work. (“Type I and II”, Pg.1)

By using gene therapy scientist from Baylor College of Medicine in Houston developed an experimental treatment for type I diabetes (“Natural” Page 1). The team have tempted to control the two major defects that are thought to be responsible for type 1 diabetes, which include autoimmune attack and destruction of the insulin-producing beta cells (“Natural” Page 1). In the experiment, a non-obese mouse has been used, which impulsively develop diabetes due to autoimmunity, just as it develops in humans(“Natural” Page 1).

A single treatment cured about 50% of the diabetic mice, restoring their blood sugar to normal so that they no longer need insulin injections," said study co-author Lawrence Chan, Chief of Baylor’s diabetes, endocrinology and metabolism division (“Natural” Page 1).

The researchers have added the original gene therapy, which protects the newly produced beta cells from the autoimmune attack. The new added gene was for interleukin-10, an imperative regulator of the immune system (“Natural” Page 1).